

CHAPTER 3A. GENERAL

Section 3A.01 Functions and Limitations

Support:

01 Markings on highways and on private roads open to public travel have important functions in providing guidance and information for the road user. Major marking types include pavement and curb markings, delineators, colored pavements, channelizing devices, and islands. In some cases, markings are used to supplement other traffic control devices such as signs, signals, and other markings. In other instances, markings are used alone to effectively convey regulations, guidance, or warnings in ways not obtainable by the use of other devices.

02 Markings have limitations. Visibility of the markings can be limited by snow, debris, and water on or adjacent to the markings. Marking durability is affected by material characteristics, traffic volumes, weather, and location. However, under most highway conditions, markings provide important information while allowing minimal diversion of attention from the roadway.

Section 3A.02 Standardization of Application

Standard:

01 **Each standard marking shall be used only to convey the meaning prescribed for that marking in this Manual. When used for applications not described in this Manual, markings shall conform in all respects to the principles and standards set forth in this Manual.**

Guidance:

02 *Before any new highway, private road open to public travel (see definition in Section 1A.13), paved detour, or temporary route is opened to public travel, all necessary markings should be in place.*

Standard:

03 **Markings that must be visible at night shall be retroreflective unless ambient illumination assures that the markings are adequately visible. All markings on Interstate highways shall be retroreflective.**

All longitudinal pavement markings shall be retroreflective except non-reflective pavement markers and directional markings for tourists. Refer to CVC 21374.

04 **Markings that are no longer applicable for roadway conditions or restrictions and that might cause confusion for the road user shall be removed or obliterated to be unidentifiable as a marking as soon as practical.**

Option:

05 **Until they can be removed or obliterated, markings may be temporarily masked with tape that is approximately the same color as the pavement.**

Guidance:

If used, the masking tape should match the pavement surface color and not provide undue contrast.

Support:

Use of black tape for temporary "masking" is effective for new Asphalt Concrete pavement. However, for faded Asphalt Concrete pavement or Portland Cement Concrete pavements, black "masking" pavement markings could appear as a stripe in low light conditions and result in confusion to road users.

Section 3A.03 Maintaining Minimum Pavement Marking Retroreflectivity

(This Section is reserved for future text based on FHWA rulemaking.)

Section 3A.04 Materials

Support:

01 Pavement and curb markings are commonly placed by using paints or thermoplastics; however, other suitable marking materials, including raised pavement markers and colored pavements, are also used. Delineators and channelizing devices are visibly placed in a vertical position similar to signs above the roadway.

02 Some marking systems consist of clumps or droplets of material with visible open spaces of bare pavement between the material droplets. These marking systems can function in a manner that is similar to the marking systems that completely cover the pavement surface and are suitable for use as pavement markings if they meet the other pavement marking requirements of the highway agency.

Guidance:

03 *The materials used for markings should provide the specified color throughout their useful life.*

04 *Consideration should be given to selecting pavement marking materials that will minimize tripping or loss of traction for road users, including pedestrians, bicyclists, and motorcyclists.*

05 *Delineators should not present a vertical or horizontal clearance obstacle for pedestrians.*

Section 3A.05 Colors

Standard:

01 Markings shall be yellow, white, red, blue, green or purple. The colors for markings shall conform to the standard highway colors. Black in conjunction with one of the colors mentioned in the first sentence of this paragraph shall be a usable color.

The color of curb markings shall conform to CVC 21458. Refer to CVC 21374 for exceptions.

02 When used, white markings for longitudinal lines shall delineate:

- A. The separation of traffic flows in the same direction, or
- B. The right-hand edge of the roadway.

03 When used, yellow markings for longitudinal lines shall delineate:

- A. The separation of traffic traveling in opposite directions,
- B. The left-hand edge of the roadways of divided highways and one-way streets or ramps, or
- C. The separation of two-way left-turn lanes and reversible lanes from other lanes.

04 When used, red raised pavement markers or delineators shall delineate:

- A. Truck escape ramps, or
- B. One-way roadways, ramps, or travel lanes that shall not be entered or used in the direction from which the markers are visible.

Support:

Red pavement markers are used to alert possible wrong way drivers on freeways as shown in Figure 3A-102(CA), Details 14 and 14A.

05 When used, blue markings shall supplement white markings for parking spaces for persons with disabilities.

06 When used, purple markings shall supplement lane line or edge line markings for toll plaza approach lanes that are restricted to use only by vehicles with registered electronic toll collection accounts.

Option:

07 Colors used for official route shield signs (see Section 2D.11) may be used as colors of symbol markings to simulate route shields on the pavement (see Section 3B.20.)

08 Black may be used in combination with the colors mentioned in the first sentence of Paragraph 1 where a light-colored pavement does not provide sufficient contrast with the markings.

A 3 inch black line may be placed between the 4 inch wide yellow lines on streets and highways under local jurisdiction.

Standard:

A 3 inch black line shall be placed between the 4 inch wide yellow lines on State highways.

Support:

09 When used in combination with other colors, black is not considered a marking color, but only a contrast-enhancing system for the markings.

Section 3A.06 Functions, Widths, and Patterns of Longitudinal Pavement Markings

Standard:

01 The general functions of longitudinal lines shall be:

- A. A double line indicates maximum or special restrictions,
- B. A solid line discourages or prohibits crossing (depending on the specific application),
- C. A broken line indicates a permissive condition, and

D. A dotted line provides guidance or warning of a downstream change in lane function.

02 The widths and patterns of longitudinal lines shall be as follows:

A. Normal line—4 to 6 inches wide.

B. Wide line—at least twice the width of a normal line.

C. Double line—two parallel lines separated by a discernible space.

D. Broken line—normal line segments separated by gaps.

E. Dotted line—noticeably shorter line segments separated by shorter gaps than used for a broken line.

The width of a dotted line extension shall be at least the same as the width of the line it extends.

Support:

03 The width of the line indicates the degree of emphasis.

~~Guidance:~~

~~**04 Broken lines should consist of 10-foot line segments and 30-foot gaps, or dimensions in a similar ratio of line segments to gaps as appropriate for traffic speeds and need for delineation.**~~

Support:

05 Patterns for dotted lines depend on the application (see Sections 3B.04 and 3B.08.)

~~Guidance:~~

~~**06 A dotted line for line extensions within an intersection or taper area should consist of 2-foot line segments and 2 to 6-foot gaps. A dotted line used as a lane line should consist of 3-foot line segments and 9-foot gaps.**~~

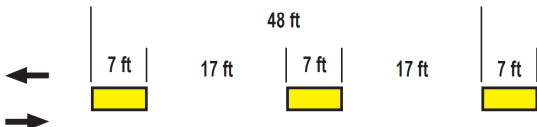
Standard:

The widths and patterns of longitudinal lines shall conform to the details shown in Figures 3A-101(CA) through 3A-112(CA).

Figure 3A-101 (CA). Centerlines - 2 Lane Highways

FOR SPEEDS 40 mph OR LESS

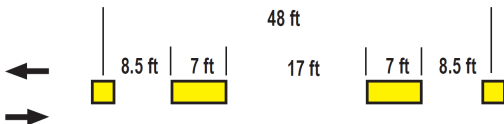
DETAIL 1



POLICY

Centerline pattern for use on two-lane streets and highways (normally used on local streets and highways).

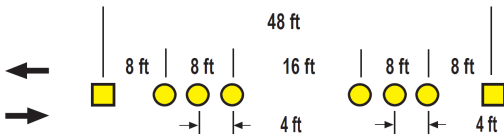
DETAIL 2



Centerline pattern with pavement markers for use on two-lane streets and highways.

**DETAIL 3
(Deleted)**

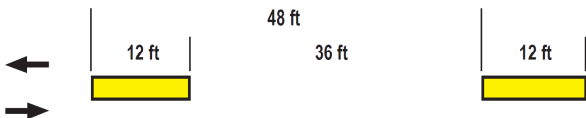
DETAIL 4



Alternate to Detail 2. For use at problem locations where it is difficult to place and maintain centerline because of moisture, sand, etc.

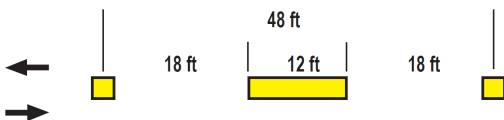
FOR SPEEDS 45 mph OR MORE

DETAIL 5



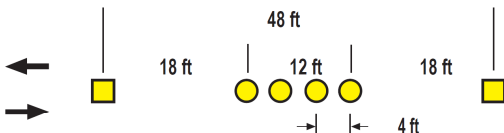
Centerline pattern for use on two-lane streets and highways (normally used on local streets and highways).

DETAIL 6



Centerline pattern with pavement markers for use on two-lane streets and highways.

DETAIL 7



Alternate to Detail 6. For use at problem locations where it is difficult to place and maintain centerline because of moisture, sand, etc.

LEGEND

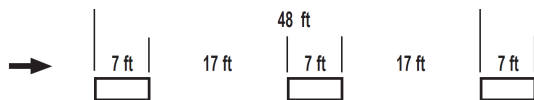
- 4 in Yellow
- Two-Way Yellow Retroreflective Markers
- Direction of Travel
- Non-Retroreflective Yellow Markers

NOT TO SCALE

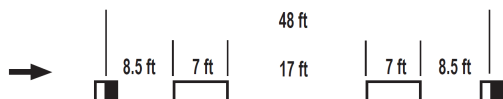
Figure 3A-102 (CA). Lane Lines - Multilane Highways

FOR SPEEDS 40 mph OR LESS

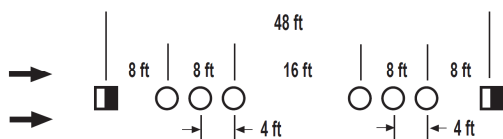
DETAIL 8



DETAIL 9

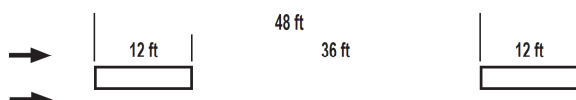


DETAIL 10

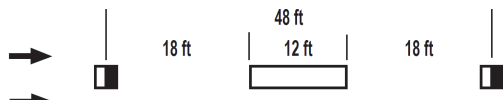


FOR SPEEDS 45 mph OR MORE

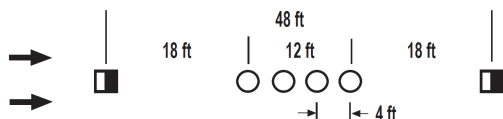
DETAIL 11



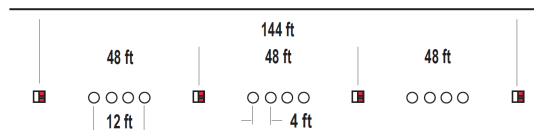
DETAIL 12



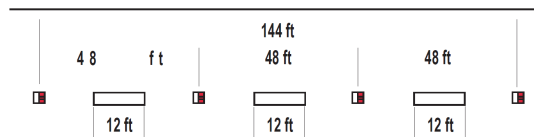
DETAIL 13



DETAIL 14



DETAIL 14A



POLICY

Lane Line pattern for use on multilane streets and highways (normally used on local streets and highways).

Lane Line pattern with pavement markers for use on multilane streets, highways and freeway ramps.

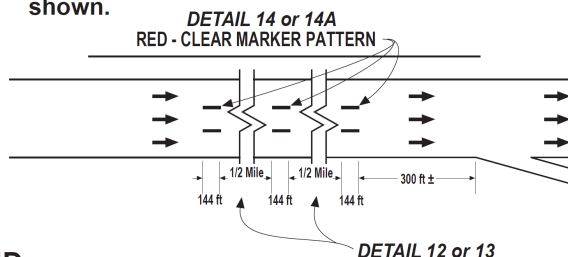
Lane Line pattern with pavement markers for use on multilane streets, highways and freeway ramps.

Lane Line pattern for use on multilane streets and highways (normally used on local streets and highways).

Lane Line pattern with pavement markers for use on multilane conventional streets and highways, State freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads. See Detail 14A.

Lane Line pattern with pavement markers for use on State freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads. See Detail 14.

Lane Line pattern with red-clear pavement markers shall be used on freeways approaching exit ramps. Detail 14 is used with Detail 13 and Detail 14A is used with Detail 12, in a pattern of four red-clear pavement markers, at intervals as shown.



LEGEND

4 in White

Direction of Travel

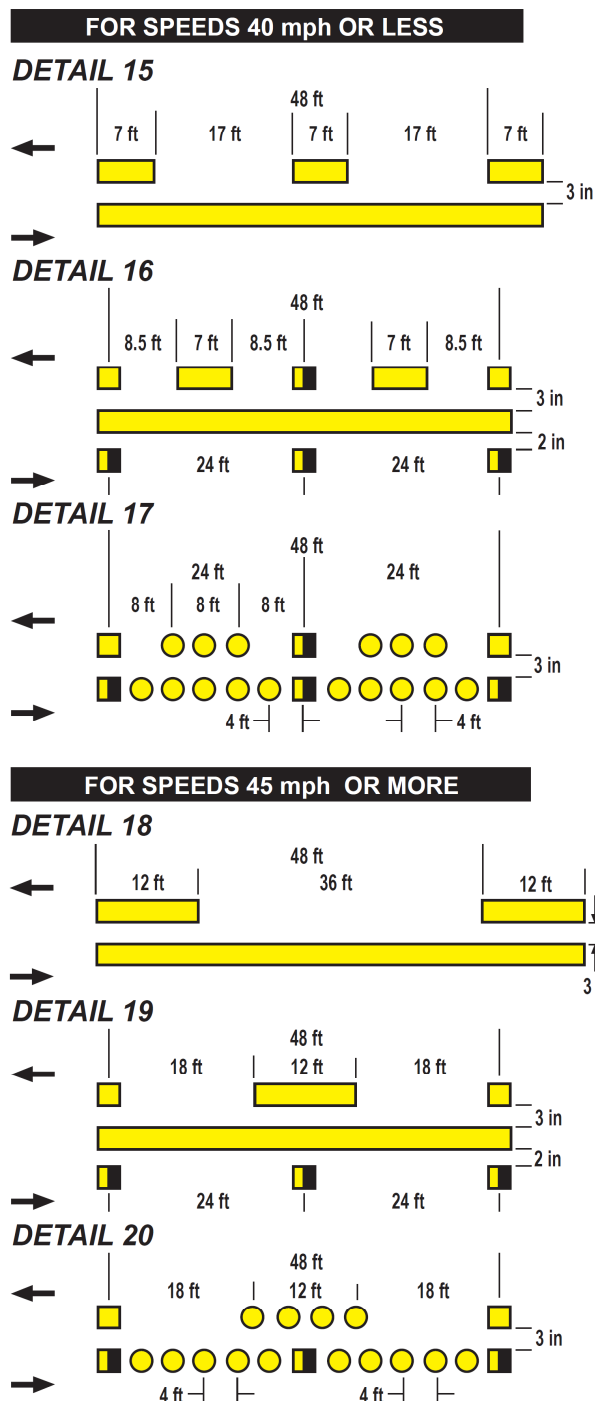
One-Way Clear Retroreflective Markers

Red-Clear Retroreflective Markers

Non-Retroreflective White Markers

NOT TO SCALE

Figure 3A-103 (CA). No Passing Zones - One Direction



POLICY

One direction no-passing pattern for use on two-lane streets and highways (normally used on local streets and highways). See Note 2.

One direction no-passing pattern with pavement markers for use on two-lane streets and highways. See Notes 1 and 2.

Alternate to Detail 16. For use with Detail 4.

One direction no-passing pattern for use on two-lane streets and highways (normally used on local streets and highways). See Note 2.

One direction no-passing pattern with pavement markers for use on two-lane streets and highways. See Notes 1 and 2.

Alternate to Detail 19. For use with Detail 7.

- NOTES: 1. Pavement markers shown off the solid line in Details 16 and 19 may be placed on the line.
2. A 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

LEGEND

	4 in Yellow		Two-Way Yellow Retroreflective Markers		Non-Retroreflective Yellow Markers
	Direction of Travel		One-Way Yellow Retroreflective Markers	NOT TO SCALE	

Figure 3A-104 (CA). No Passing Zones - Two Direction

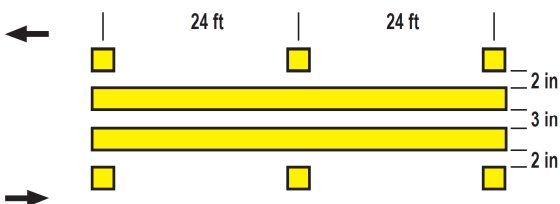
DETAIL 21



POLICY

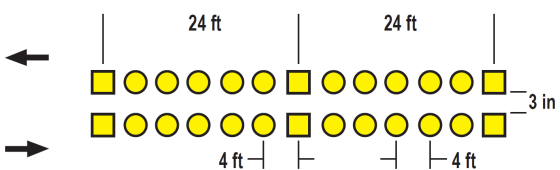
Two-direction no-passing pattern for use on two-lane streets and highways (normally used on local streets and highways). See Note 2.

DETAIL 22



Two-direction no-passing pattern with pavement markers for use on two-lane streets and highways. See Notes 1 and 2.





DETAIL 23



Alternate to Detail 22. For use with either Detail 4 or Detail 7.

- NOTES:**
1. Pavement markers shown off the solid line in Detail 22 may be placed on the line.
 2. A 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

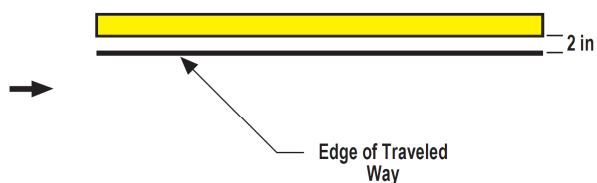
LEGEND

- | | |
|---|--|
|  4 in Yellow |  Two-Way Yellow Retroreflective Markers |
|  Direction of Travel |  Non-Retroreflective Yellow Markers |

NOT TO SCALE

Figure 3A-105 (CA). Left Edge Lines for Divided Highways

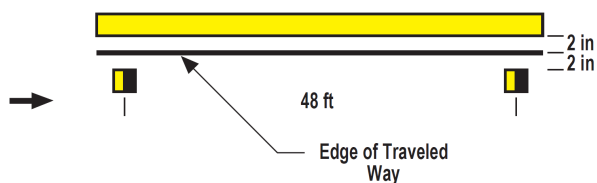
DETAIL 24



POLICY

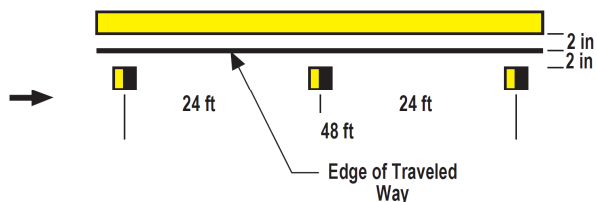
Left Edge Line pattern for use on streets and highways (normally used on local streets and highways).

DETAIL 25



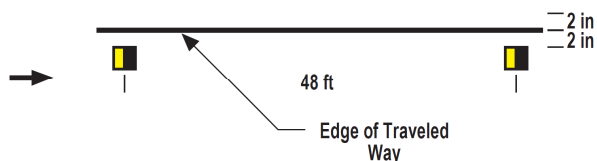
Left Edge Line for use on State highways.

DETAIL 25A



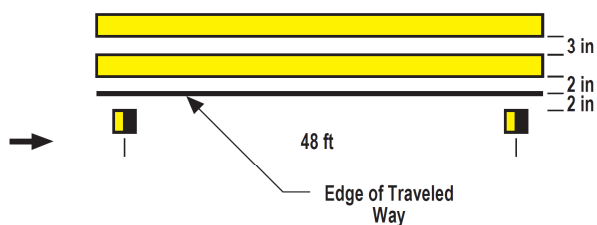
Left Edge Line for use on freeway ramps and connectors.

DETAIL 26



Alternate to Details 24 and 25 when there is adequate contrast between travelled way and shoulder.

DETAIL 27



Alternate to Detail 25. A double solid yellow line may be used for more emphasis when motorists tend to use the shoulder for a through lane, or where encroachments onto the shoulder occasionally occur. See Note 1.

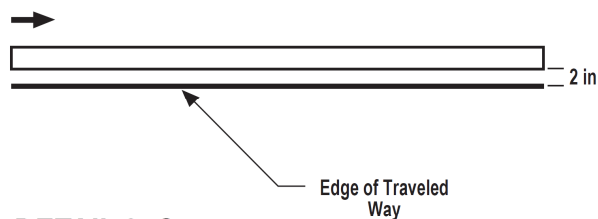
NOTE: 1. A 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

LEGEND

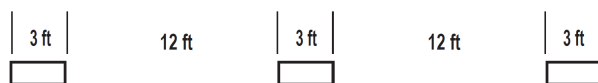
-  4 in Yellow
-  One-Way Yellow Retroreflective Markers
-  Direction of Travel
- NOT TO SCALE**

Figure 3A-106 (CA). Right Edge Line and Right Edge Line Extension Through Intersections

DETAIL 27B
Right Edge Line



DETAIL 27C
Right Edge Line Extension
Through Intersections



POLICY

Right Edge Line pattern for use on all State highways may be used on local streets and highways. It is generally dropped at the beginning of the intersection flares on conventional highways. See also Detail 27C. On freeways, it may be flared in advance of the exit ramp as shown in Figure 3B-8 (CA).

Right Edge Line Extension Through Intersections pattern for use to extend the right edgeline through an intersection where climatic conditions, such as areas of heavy fog, may require additional guidance.

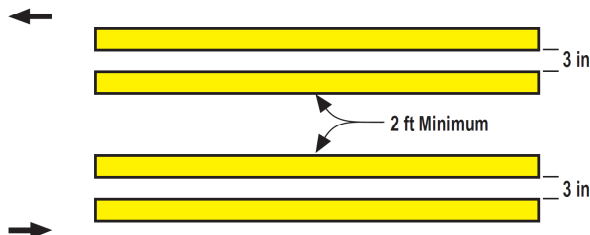
LEGEND



NOT TO SCALE

Figure 3A-107 (CA). Median Islands

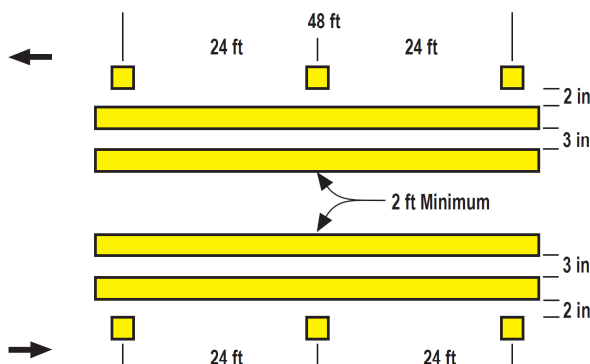
DETAIL 28



POLICY

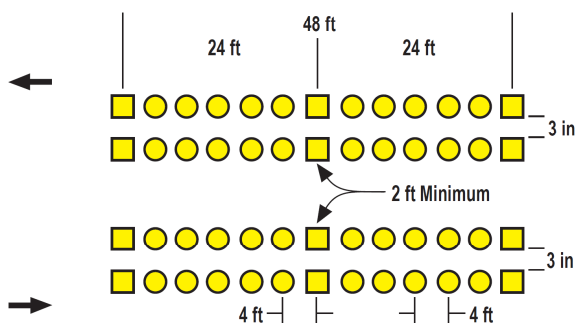
Double Left Edge Line pattern for use on all-paved sections of streets and highways (normally used on local streets and highways). See Note 2.

DETAIL 29



Double Left Edge Line pattern with pavement markers for use on all-paved sections of streets and highways. See Notes 1 and 2.





DETAIL 30



Alternate to Detail 29. For use at problem locations where it is difficult to place and maintain lines because of moisture, sand, etc.

- NOTES:**
1. Pavement markers shown off the solid line in Detail 29 may be placed on the line.
 2. A 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

LEGEND

- | | |
|---|--|
|  4 in Yellow |  Two-Way Yellow Retroreflective Markers |
|  Direction of Travel |  Non-Retroreflective Yellow Markers |

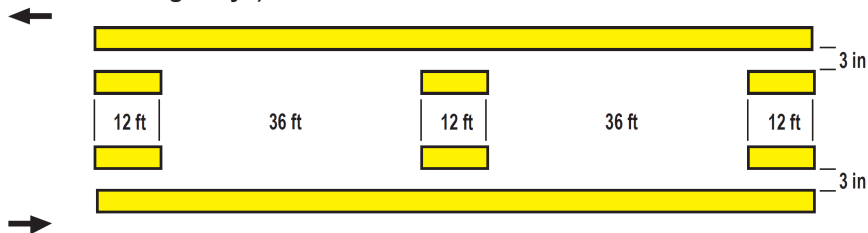
NOT TO SCALE

Figure 3A-108 (CA). Two-Way Left-Turn Lanes

DETAIL 31

POLICY

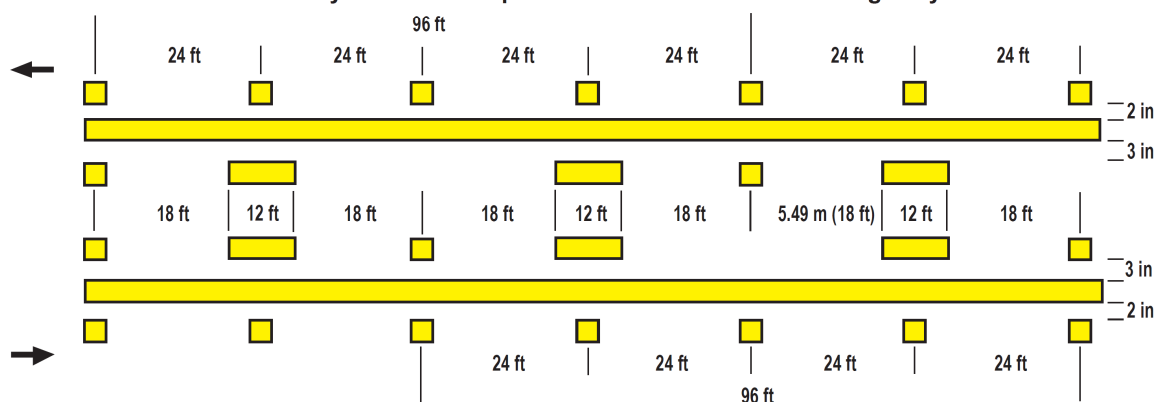
Two-way left-turn lane pattern for use on streets and highways (normally used on local streets and highways). See Note 2.



DETAIL 32

POLICY

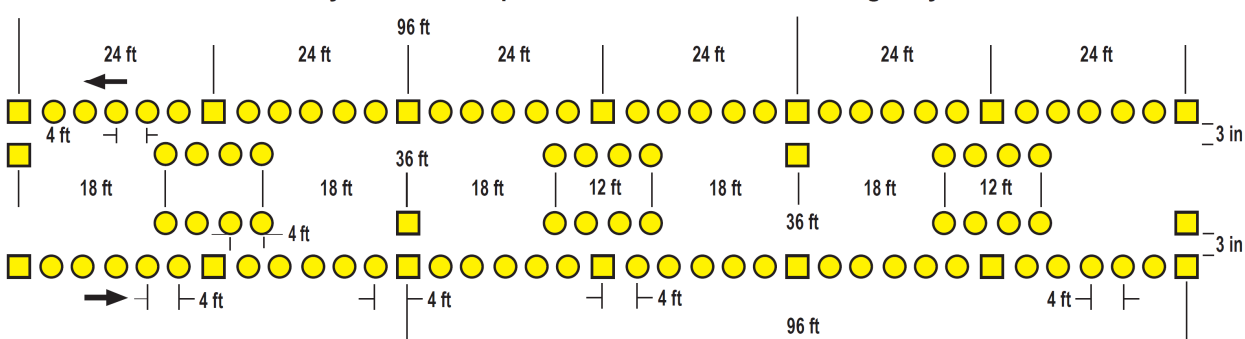
Two-way left-turn lane pattern for use on streets and highways. See Note 2.



DETAIL 33





POLICY

Two-way left-turn lane pattern for use on streets and highways.



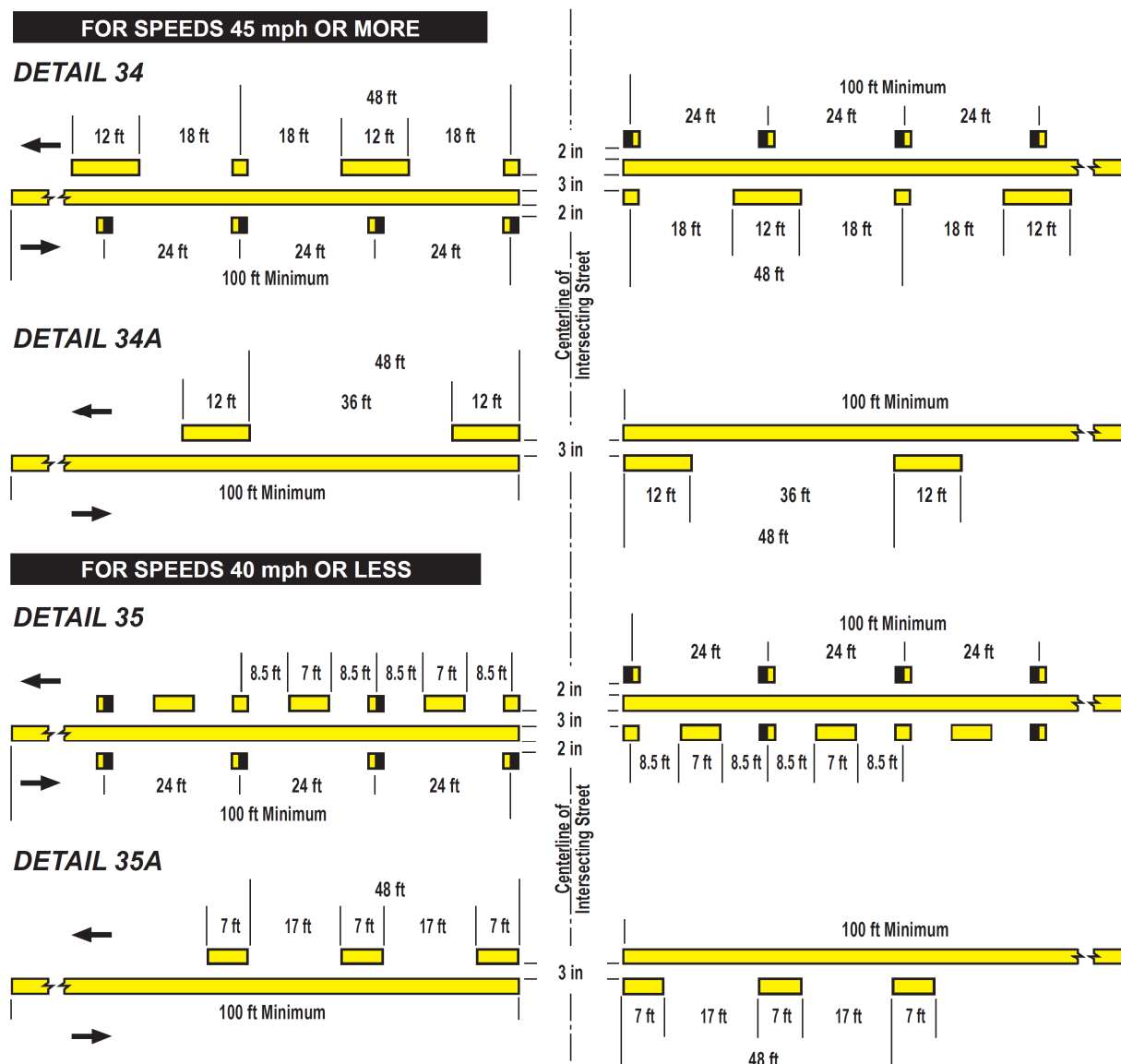
- NOTES:**
1. Pavement markers shown off the solid line in Detail 32 may be placed on the line.
 2. A 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

LEGEND

- | | |
|---|--|
|  4 in Yellow |  Two-Way Yellow Retroreflective Markers |
|  Direction of Travel |  Non-Retroreflective Yellow Markers |

NOT TO SCALE

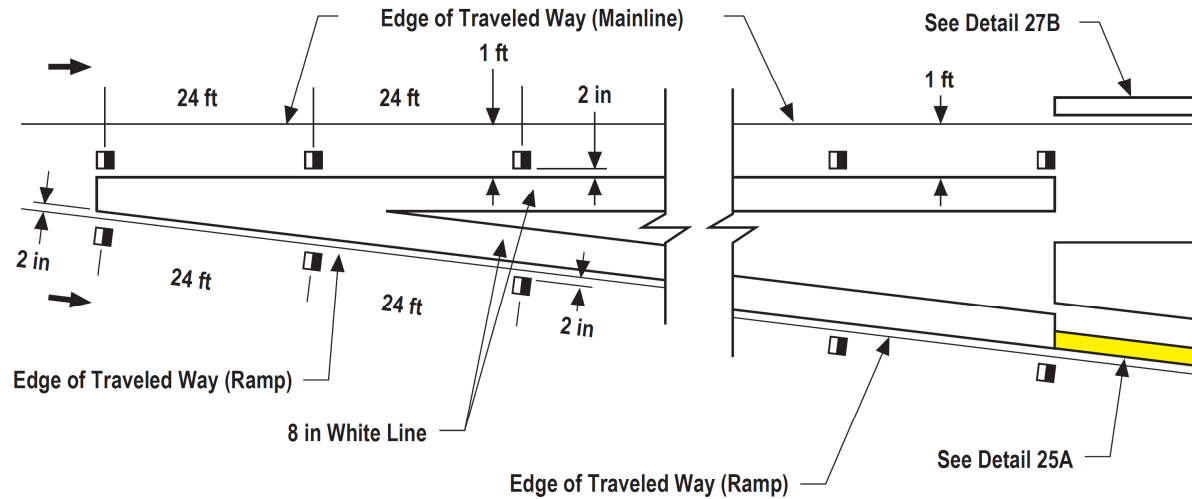
Figure 3A-109 (CA). Intersection Markings







- NOTES:**
1. Raised Pavement Markers are optional on non-state highways.
 2. Raised Pavement Markers shown off the solid line may be placed on the line.
 3. A 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

**Figure 3A-110 (CA). Freeway Exit and Entrance Ramp Channelizing Line
(Sheet 1 of 2)**

**DETAIL 36 - Exit Ramp Neutral Area (Gore) Channelizing Lines
(See Figure 3B-8 (CA), Sheet 2 of 2)**



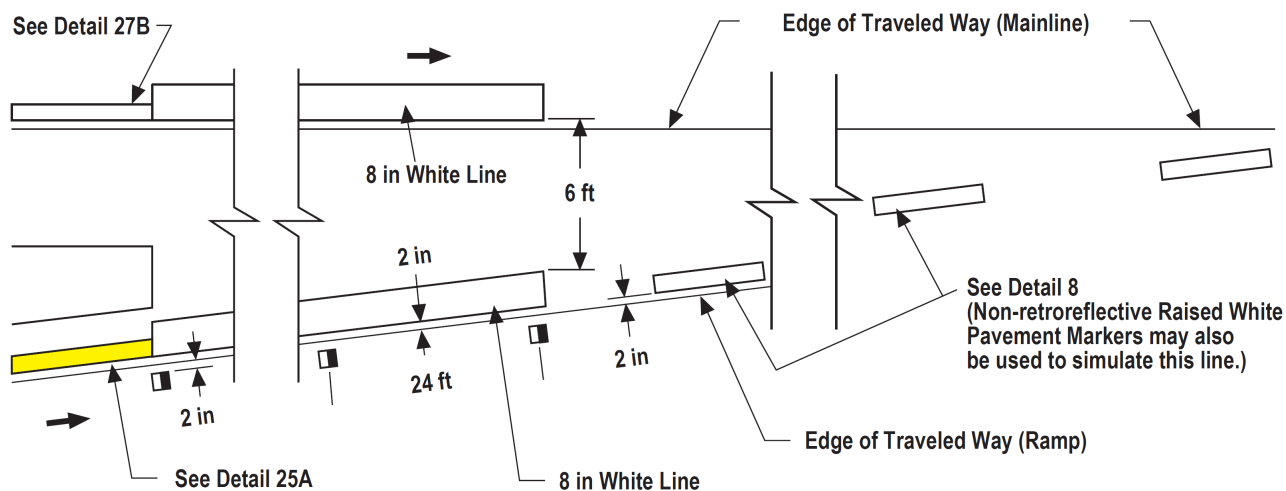
LEGEND

- | | |
|---|---|
|  4 in White |  One-Way Clear Retroreflective Markers |
|  4 in Yellow |  Direction of Travel |

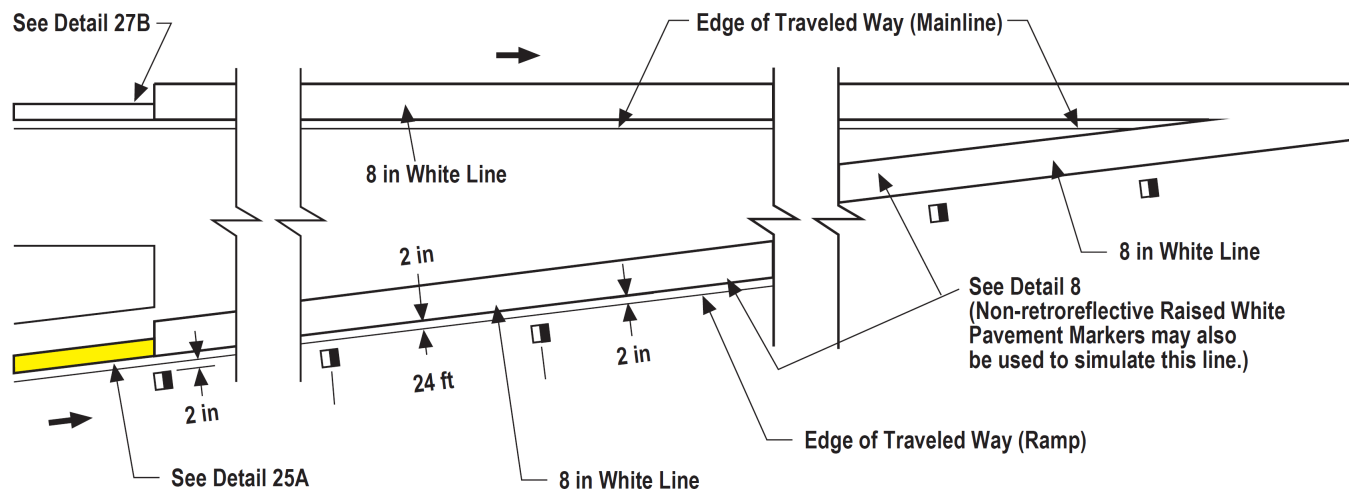
NOT TO SCALE

**Figure 3A-110 (CA). Freeway Exit and Entrance Ramp Channelizing Lines
(Sheet 2 of 2)**


**DETAIL 36A - Entrance Ramp Neutral Area (Merge) Channelizing Lines
(See Figure 3B-9 (CA), Sheet 1 of 2)**



**DETAIL 36B - Entrance Ramp Neutral Area (Acceleration Lane) Channelizing Lines
(See Figure 3B-8 (CA), Sheet 3 of 3)**



LEGEND

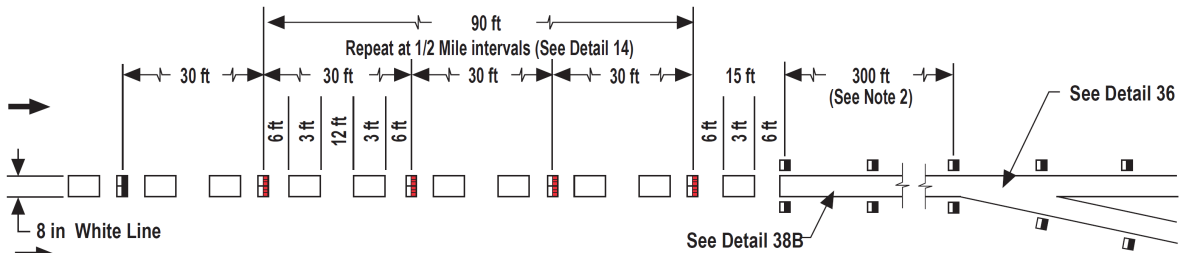
- | | |
|---|---|
|  4 in White |  One-Way Clear Retroreflective Markers |
|  4 in Yellow |  Direction of Travel |

NOT TO SCALE

Figure 3A-111 (CA). Lane Drop Markings

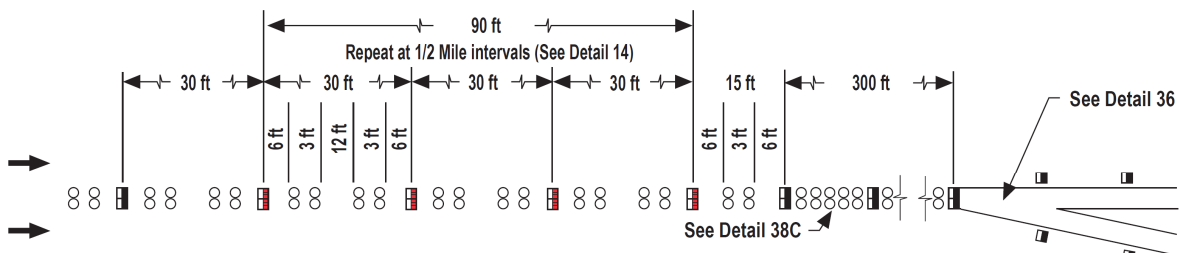
DETAIL 37 - Lane Drop Markings at Exit Ramps

Marking pattern for use on mandatory lane drops at freeway exit ramps and freeway to freeway connectors.



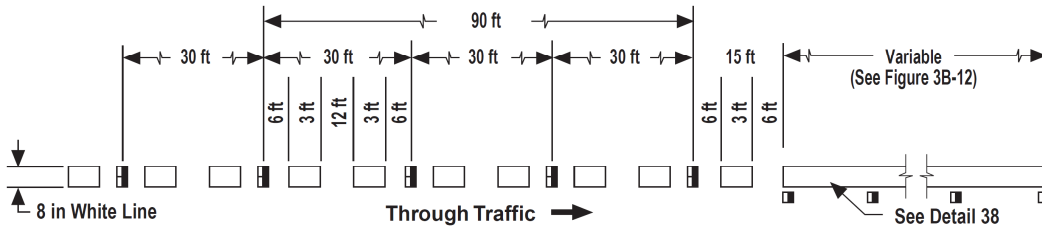
DETAIL 37A - Alternate to Detail 37

For use with Detail 10 and 13.



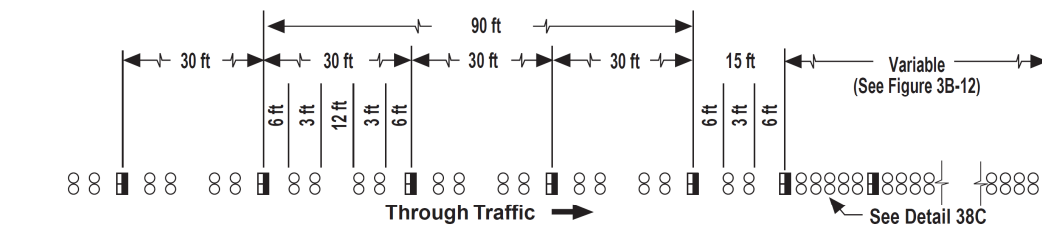
DETAIL 37B - Lane Drop Markings at Conventional Highway Intersections

Marking pattern for use on mandatory turn lanes at intersections. Pavement markers shown are optional on local streets and highways.



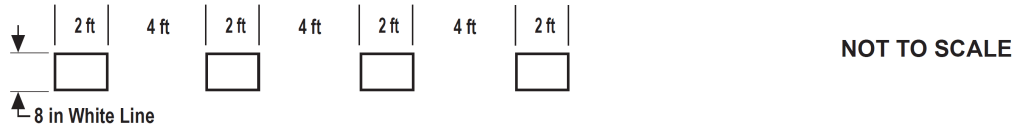
DETAIL 37C - Alternate to Detail 37B

For use with Detail 10 and 13.



DETAIL 37D - Lane Drop Line For Two-Lane Roundabouts

For use on mandatory exiting lanes from two-lane roundabouts.



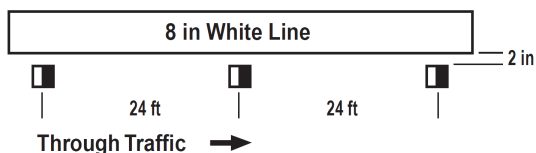
- NOTES: 1. Pavement markers shown off the solid line in Detail 37 may be placed on the line.
2. The Solid Channelizing Line shown in Detail 37 and 37A may be omitted on short auxiliary lanes where weaving length is critical.

LEGEND

- 88 Non-Retroreflective White Markers One-Way Clear Retroreflective Markers
➔ Direction of Travel Red-Clear Retroreflective Markers

Figure 3A-112 (CA). Channelizing Line and Lane Line/Centerline Extensions

DETAIL 38 - Channelizing Line



POLICY

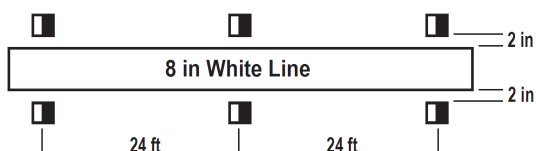
Typical channelizing line for use on Left-Turn or Right-Turn lanes on State highways. Pavement Markers when used should be placed on the through traffic side only.

DETAIL 38A - Channelizing Line



Typical channelizing line for use on Left-Turn or Right-Turn lanes on local streets and highways and freeway off-ramp terminals.

DETAIL 38B - Channelizing Line at Exit Ramps

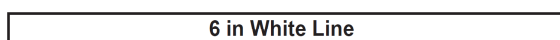


Typical channelizing line for use on Exit Ramps. Pavement Markers as shown may also be placed on the line.

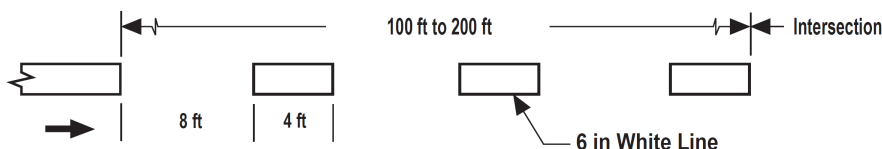
DETAIL 38C - Alternate to Detail 38 and 38B



DETAIL 39 - Bike Lane Line



DETAIL 39A - Bike Lane Intersection Line

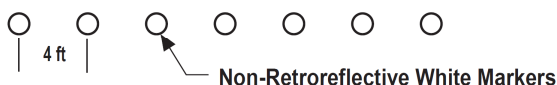


DETAIL 40 - Lane Line Extension Through Intersections

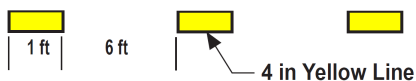


The Lane Line Extension Through Intersections line is used to extend the lane line through an intersection that might otherwise be confusing to the motorist.

DETAIL 40A - Alternate to Detail 40



DETAIL 41 - Centerline Extension Through Intersections



The Centerline Extension Through Intersections line is used to extend the centerline through an intersection that might otherwise be confusing to the motorist.

DETAIL 41A - Alternate to Detail 41



NOT TO SCALE

